IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Dath	§	Atty. Dkt. No.: F-857
	§	
Serial No.: 10/524,640	§	Group Art Unit: 1797
	§	
Confirmation No.: 1992	§	Cust. No.: 25264
	§	
Filed: May 30, 2006	§	Examiner: Bullock
	§	
For: Production of Olefins	§	
	§	
	§	
	§	

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Honorable Commissioner:

CERTIFICATE OF EFS-WEB TRANSMISSION
37 CFR 1.10
I hereby certify that this correspondence is being deposited on the date below with the United States Patent Office via the EFS-Web service.

7/25/09
Date

Signature

APPEAL BRIEF

Appellants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 1797 dated March 4, 2009, finally rejecting claims 1-7 and 11-22.

Real Party in Interest

The present application has been assigned to TOTAL Petrochemicals Research Feluy, Zone Industrielle C, Seneffe, Belgium B7181.

Related Appeals and Interferences

Appellants assert that U.S. Pat. Appl. Ser. No. 10/569,240 is under appeal and such appeal may directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-22 were originally presented in the application. Claims 8-10 were cancelled in a Preliminary Amendment. Accordingly, claims 1-7 and 11-22 are pending in the application and stand rejected under 35 U.S.C. §103(a). The rejection of the pending claims is appealed. The pending claims are shown in the attached Appendix A.

Status of Amendments

No amendments have been made to the pending claims in Response to the Final Office Action.

Summary of Claimed Subject Matter

Independent claim 1 recites a process for converting a carbon containing feedstock to provide an effluent containing light olefins, the process comprising passing a feedstock containing carbon containing compounds consisting essentially of C_1 to C_6 aliphatic hetero compounds selected from the group consisting of alcohols, ethers, carbonyl compounds and mixtures thereof and containing steam in an amount up to 80 weight % of said feedstock, through a reactor containing a crystalline silicate catalyst to produce an effluent including propylene which is recovered from the reactor, wherein the crystalline silicate catalyst is pretreated by subjecting said catalyst to steaming to de-aluminate said catalyst and is selected from at least one of an MFI crystalline silicate having a silicon/aluminum atomic ratio within the range of 250 to 500 and an MEL crystalline silicate having a silicon/aluminum atomic ratio within the range of 150 to 800. *See*, Specification, at least page 4, lines 5-13.

Independent claim 15 recites a process for converting a carbon containing feedstock to provide an effluent containing light olefins comprising (a) treating an MFI crystalline silicate with steam to de-aluminate said catalyst and increase the silicon/aluminum atomic ratio thereof to a value within the range of 250-500; (b) providing a reactor containing said de-aluminated MFI crystalline silicate; (c) supplying a feedstock containing carbon containing compounds consisting essentially of C_1- C_6 aliphatic hetero compound selected from the group consisting of alcohols, ethers,

carbonyl compounds and mixtures thereof to said reactor containing said MFI crystalline silicate catalyst; (d) providing steam to said reactor in an amount of up to 80 weight % of said feedstock to said reactor; (e) operating said reactor under conversion conditions to convert at least a portion of said feedstock to propylene; and (f) recovering a conversion product containing propylene from said reactor. *See.* Specification, at least page 4, lines 5-13.

Grounds of Rejection to be Reviewed on Appeal

1. The rejection of claims 1-7 and 11-22 under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 4,849,573 (*Kaeding*) in view of EP 0921181 (*Fina*).

Arguments

I. THE EXAMINER ERRED IN REJECTING CLAIMS 1-7 AND 11-22 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER *KAEDING IN VIEW OF FINA*.

Kaeding teaches catalytically converting methanol to light olefins with zeolites having high silica to alumina ratios for high conversion. *See*, Abstract. In contrast, *Dath* teaches converting C_4 or greater olefins into lighter olefins. *See*, Abstract. However, while the Final Office Action acknowledges that *Kaeding* "does not disclose the particulars of steaming and extracting aluminum from the catalyst", the Action does state that "it would have been obvious to one having ordinary skill in the art that the disclosure of Kaeding...would having included...dea[l]uminating the catalyst...as evidenced by EP reference". See, Final Office Action at page 4, third full paragraph and last full paragraph. Appellants respectfully disagree.

While the Supreme Court of the United States has recently rejected a formalistic and rigid application of the teaching, suggestion, or motivation test as an exclusive test in the obviousness inquiry, it nevertheless made clear that an invention '"composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art". *See*, KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741 (2007). The Supreme Court elucidated on this matter by stating that "it can be important to identify a reason that would have prompted a person of ordinary skill

in the relevant field to combine elements in the way the claimed new invention does". *See, Id.*

Appellants respectfully submit that there is no suggestion for such modification in the art of record. It is well settled that there must be a suggestion for the modification in the prior art even if in hindsight, the prior art appears combinable. The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. *See*, *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). Appellants respectfully submit that an assertion of an obviousness to try is not sufficient to demonstrate a prima facie case of obviousness. The references of record do not provide a motivation to replace the catalyst in *Kaeding* (for a methanol to propylene conversion process) with the catalyst of *Fina* (used for a C_{4+} olefin conversion process to propylene).

Furthermore, Appellants respectfully submit that the teachings of *Fina* lack a firm basis to predict the effect of the proposed interchange (*see*, *Ex parte Koo*, 150 U.S.P.Q. 131 (Bd. Pat. App. 1965) at 132) and therefore cannot reasonably be combined to render the claims of the present application obvious. Rather, both the suggestion and the expectation of success must be found in the prior art rather than Appellants disclosure. Accordingly, Appellants respectfully request reversal of the rejection.

Conclusion

In conclusion, no motivation to alter the process of *Kaeding* by utilizing the catalyst of *Dath* appears in either reference. Thus, Appellants respectfully submit that a prima facie case of obviousness has not been proved and respectfully request reversal of the rejections of claims 1-7 and 11-22.

Respectfully submitted,

Tenley R. Krueger
Registration No. 51,253
T.R. Krueger, P.C.
P.O. Box 16356
Sugar Land, Texas 77496

Telephone: 281-778-8934
Fascimile: 281-778-8937
Attorney for Appellant(s)

Appendix A

Pending Claims

1. A process for converting a carbon containing feedstock to provide an effluent containing light olefins, the process comprising passing a feedstock containing carbon containing compounds consisting essentially of C_1 to C_6 aliphatic hetero compounds selected from the group consisting of alcohols, ethers, carbonyl compounds and mixtures thereof and containing steam in an amount up to 80 weight % of said feedstock, through a reactor containing a crystalline silicate catalyst to produce an effluent including propylene which is recovered from the reactor, wherein the crystalline silicate catalyst is pretreated by subjecting said catalyst to steaming to de-aluminate said catalyst and is selected from at least one of an MFI crystalline silicate having a silicon/aluminum atomic ratio within the range of 250 to 500 and an MEL crystalline silicate having a silicon/aluminum atomic ratio within the range of 150 to 800.

2. a process according to claim 1 wherin the MFI crystalline silicate catalyst comprises silicalite.

3. a process according to claim 1 wherein the carbon containing feedstock contains at least one hetero compound selected from the group consisting of methanol, ethanol, dimethyl ether, diethyl ether and mixtures thereof.

4. A process according to claim 1, wherein the carbon containing feedstock is passed over the crystalline silicate at a reactor inlet temperature of 350 to 650° C.

5. A process according to claim 4 wherein the carbon containing feedstock is passed over the crystalline silicate at a reactor inlet temperature of from 450 to 550° C.

6. A process according to claim 1 wherein the carbon containing feedstock is passed over the crystalline silicate at a WHSV of from 0.5 to 30 h^{-1}, the WHSV being based on the weight of the at least one C_1 to C_6 aliphatic hetero compound in the feedstock.

7. A process according to claim 6 wherein the partial pressure of the at least on C_1 to C_6 aliphatic hetero compound in the feedstock when passed over the crystalline silicate is from 20 to 400 kPa.

11. A process according to claim 1 wherein the crystalline silicate catalyst is pretreated by subjecting said catalyst to steaming, followed by extracting aluminum from the catalyst by contacting said catalyst with a complexing agent for aluminum to remove aluminum resulting from steaming from the pores of the catalyst framework.

12. A process according to claim 1 wherein said catalyst comprises an MFI crystalline silicate having a silicon/aluminum atomic ratio within the range of 250 to 500.

13. The process according to claim 1 wherein said catalyst comprises an MEL crystalline silicate having a silicon/aluminum atomic ratio within the range of 150-800.

14. A process according to claim 1 wherein pretreatment of said catalyst by steaming reduces tetrahedral aluminum in the crystalline silicate framework of the catalyst and converts the tetrahedral aluminum to octahedral aluminum in the form of amorphous alumina, causing partial obstruction of the pores of the crystalline silicate framework and said catalyst is treated with a complexing agent for aluminum to remove amorphous alumina from the pores of the crystalline silicate framework.

15. A process for converting a carbon containing feedstock to provide an effluent containing light olefins comprising:

(a) treating an MFI crystalline silicate with steam to de-aluminate said catalyst and increase the silicon/aluminum atomic ratio thereof to a value within the range of 250-500;

(b) providing a reactor containing said de-aluminated MFI crystalline silicate;

(c) supplying a feedstock containing carbon containing compounds consisting essentially of C_1- C_6 aliphatic hetero compound selected from the group consisting of

alcohols, ethers, carbonyl compounds and mixtures thereof to said reactor containing said MFI crystalline silicate catalyst;

(d) providing steam to said reactor in an amount of up to 80 weight % of said feedstock to said reactor;

(e) operating said reactor under conversion conditions to convert at least a portion of said feedstock to propylene; and

(f) recovering a conversion product containing propylene from said reactor.

16. A process according to claim 15 wherein the carbon containing feedstock contains at least one hetero compound selected from the group consisting of methanol, ethanol, dimethyl ether, diethyl ether and mixtures thereof.

17. The process of claim 15 wherein said feedstock comprises methanol and said reactor is operated under conversion conditions comprising an inlet temperature within the range of 450-550° C.

18. The process of claim 17 wherein said reactor is operated under conversion conditions providing a product containing propylene and ethylene and having a propylene/ethylene ratio which is greater than the propylene/ethylene ratio of a conversion product produced by the conversion of a methanol-containing feedstock operated at an inlet temperature in said reactor of 4000 C.

19. The process of claim 17 wherein said reactor is operated under conversion conditions providing a product containing propylene and propane and having a propylene/propane ratio which is greater than the propylene/propane ratio of a conversion product produced by the conversion of a methanol-containing feedstock operated at an inlet temperature of 4000 C.

20. A process according to claim 15 wherein pretreatment of said catalyst by steaming reduces tetrahedral aluminum in the crystalline silicate framework of the catalyst and converts the tetrahedral aluminum to octahedral aluminum in the form of

amorphous alumina, causing partial obstruction of the pores of the crystalline silicate framework and said catalyst is treated with a complexing agent for aluminum to remove amorphous alumina from the pores of the crystalline silicate framework.

21. A process according to claim 15 wherein the carbon containing feedstock is passed over the crystalline silicate at a reactor inlet temperature of from 450 to 550° C.

22. A process according to claim 15 wherein the carbon containing feedstock is passed over the crystalline silicate at a WHSV of from 0.5 to 30 h^{-1}, the WHSV being based on the weight of the at least one C_1 to C_6 aliphatic hetero compound in the feedstock.

Appendix B

Evidence

Not Applicable

Appendix C

Related Proceedings

Not Applicable